Appendix B

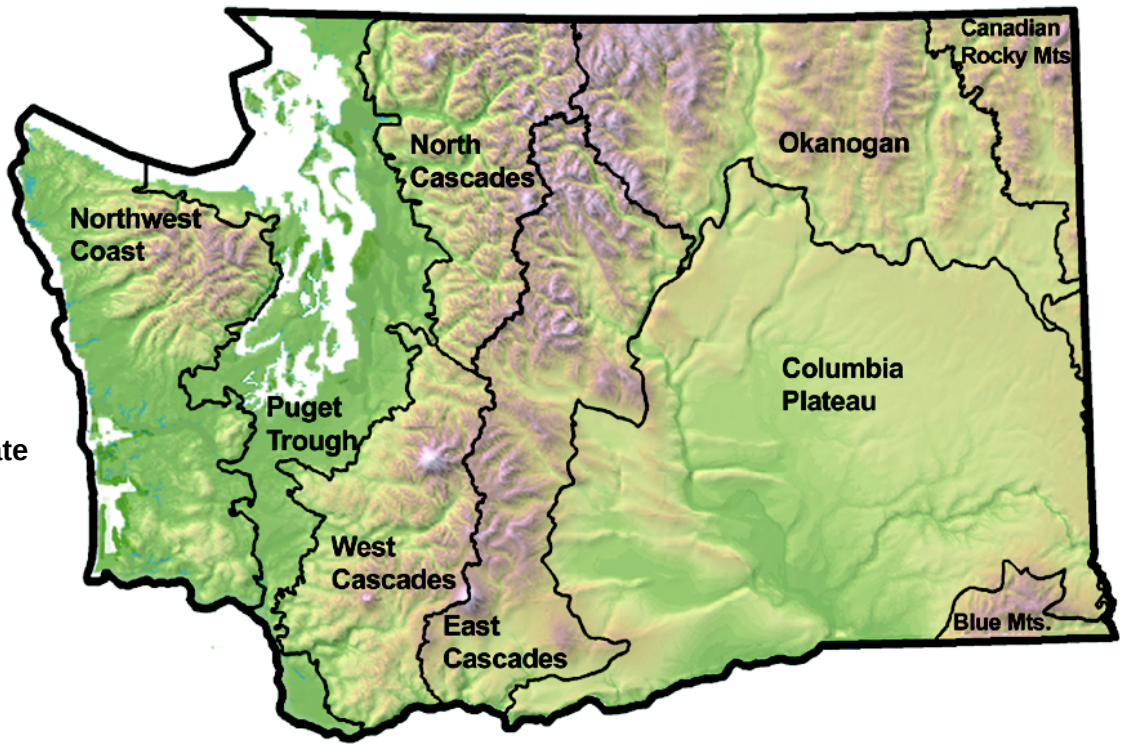
Ecoregion Biota

The following map and descriptions of the biota of each of Washington's ecoregions have been excerpted from the State of Washington's 2003 *Natural Heritage Plan*, published by DNR.

Pacific Northwest Coast Ecoregion

Coniferous forests dominate the vegetation of the ecoregion. Lowland forests are dominated by western hemlock, Douglas-fir, and western redcedar. In the coastal fog belt, Douglas-fir is rare and Sitka spruce becomes abundant. Forests in the mountains are mostly dominated by Pacific silver fir and mountain or western hemlock. High elevations in the Olympic Mountains have subalpine parkland and alpine habitats.

Two of the largest esturaries on North America's west coast are part of this ecoregion. Other special habitats include coastal dunes, wetlands, riparian areas, and sphagnum bogs. The Olympic Mountains are rich in rare plant species due to their isolation, the number of unusual habtats, and the presence of steep environmental gradients. They include species endemic to the Olympic Mountains as well as species that are disjunct from other mountainous areas.



Ecoregions of Washington State

Puget Trough Ecoregion

The vegetation of the Puget Trough is dominated by Douglas-fir forests with western hemlock and redcedar as the primary late-successional species. Oregon white oak, Pacific madrone, bigleaf maple, and red alder forests are frequent components of the landscape. Grassland habitats are often associated with oak habitats and support a number of rare species, including the federally threatened golden paintbrush and a number of butterfly species. Historically, frequent fires maintained these grasslands and the adjacent open oak woodlands. Many rare grassland species are declining as this landscape becomes more urbanized and fire suppression leads to more densely forested areas. Other special habitats within the ecoregion include wetlands, riparian areas, bogs and estuaries.

North Cascades Ecoregion

The vegetation of the North Cascades ecoregion in Washington consists mostly of western hemlock – Douglas-fir – western redcedar forests at low elevations, Pacific silver fir – western hemlock forests at middle elevations, and a mosaic of mountain hemlock – silver fir forests and subalpine parkland at high elevations. Natural stand replacement fires occur at irregular intervals of 90 to 250 years. Above the timberline, alpine heaths, meadows and fellfields are interspersed with barren rock, ice, and snow. Special habitats include riparian areas dominated by broadleaf trees, avalanche chutes dominated by Sitka alder or vine maple, and wetlands. Rare plant species in this ecoregion are often circumboreal species on the southern edge of their range, with populations scattered in the high Cascades. This ecoregion is one of the few in Washington with a variety of large carnivores, including gray wolf, grizzly bear, and wolverine. Salmon are found in most of the large rivers.

West Cascades Ecoregion

Conifer forests dominate the vegetation of the West Cascades ecoregion. Douglas-fir – western hemlock forests are typical at low elevations. Middle elevations characteristically have Pacific silver fir, western hemlock, Douglas-fir, and noble fir. High elevations have mountain hemlock – silver fir forests and subalpine parklands. Higher elevations on volcanic peaks support alpine heath, meadows, and fellfields among glaciers and rock. Special habitats include riparian areas dominated by broadleaf species, wetlands, grassy balds, and oak woodlands. Mount Rainier supports a few endemic rare plant species, as does the Columbia River Gorge. Both are areas of high plant diversity. The Columbia River Gorge has added biogeographic significance because of the mixing of coastal and interior floras.

East Cascades Ecoregion

Conifer forests dominate the East Cascades ecoregion. They are usually more open and patchy than forests of ecoregions west of the Cascades. Grand fir – Douglas-fir – ponderosa pine forests are characteristic types. Oregon white oak woodlands appear at lower elevations in the southern half of the ecoregion, and subalpine fir – mountain hemlock – Engelmann spruce types are found at higher elevations. Douglas-fir – western hemlock – Pacific silver fir forests are present and can be locally abundant near low divides of the Cascades. Whitebark pine, lodgepole pine, and western larch are common components of these forests.

Historically, stand replacement fires occurred at irregular intervals from 10 years in the lowland foothills to 150 years or more at high elevations. Decades of fire suppression have resulted in large areas of dense, fire-prone forests.

Shrub-steppe vegetation occurs along the foothills and higher south-facing slopes in the ecoregion, generally composed of big sagebrush or antelope bitterbrush with native bunchgrasses. Alpine and subalpine parklands occur on the highest ridges, more commonly so north of Snoqualmie Pass.

Okanogan Ecoregion

Conifer forests dominate the mountain ridges and low hills in the ecoregion, while valleys and lowlands are often non-forested. The conifer forests are more open and less continuous, consisting of smaller stands, than are forests west of the Cascade crest and in the Canadian Rockies. Douglas-fir – ponderosa pine form the ecoregion's characteristic forests. They transition to shrub-steppe in the low broad valleys in the eastern part of the ecoregion, and to grasslands in the western part. Subalpine fir – Engelmann spruce forests occur at higher elevations. Whitebark pine, lodgepole pine, and subalpine larch form parklands in the highest elevations, often associated with dry alpine or subalpine meadows. The moister forests are dominated by Douglas-fir, with western larch, western white pine or quaking aspen as common components.

Historically, stand replacement fires occurred at irregular intervals from 10 years in the lowland foothills to 150 years or more at high elevations. Decades of fire suppression have resulted in a landscape composed of dense, fire-prone forests.

Canadian Rockies Ecoregion

Coniferous forests dominate this ecoregion. The composition of the forestsreflects variation in moisture, temperature and elevation. Douglas-fir – ponderosa pine forests occur at low elevations; grand fir – western hemlock – western redcedar forests are characteristic of mid-montane elevations; and subalpine fir – Engelmann spruce forests are found at

higher elevations. Whitebark pine, lodgepole pine, and subalpine larch form parklands in the highest elevations. Western larch and western white pine can be major components of the moister forests.

Fire has played a significant role in the development of the forests in this ecoregion, with a 10-year return interval in the lowland foothills and a 150-year return interval at high elevations and in protected canyons. Decades of fire suppression have resulted in dense, fire-prone forests.

Grasslands occur along the foothills and on higher elevation, south-facing slopes. These grasslands are variously dominated by green fescue, Idaho fescue, or rough fescue.

Blue Mountains Ecoregion

The Blue Mountains ecoregion is dominated by coniferous forest, but because of its characteristic abrupt topography and wide elevation ranges, it also supports grasslands and shrublands along low dry canyons, on broad plateaus and in subalpine meadows. Douglas-fir – ponderosa pine forests are characteristic of the low and middle elevations, with subalpine fir – Engelmann spruce types occurring at higher elevations. Western larch, lodgepole pine, and western white pine are components of mesic forests. Canyon grassland vegetation occurs on the steep slopes above the Grande Ronde and Snake Rivers. Plateau grasslands appear within the forest matrix. Dense shrublands occur in the higher canyons along the Oregon border.

Historically, stand replacement fires occurred at irregular intervals from 10 years in the lowland foothills to 150 years or more at high elevations. Decades of fire suppression have resulted in a semi-natural to natural landscape composed of dense, fire-prone forests.

Columbia Plateau Ecoregion

The ecoregion is most often characterized as shrub-steppe dominated by various species of sagebrush and bunchgrasses. Most of the ecoregion's remaining native vegetation occurs on steep canyon sides and on the shallower soils of basalt scablands. Bitterbrush and three-tip sagebrush steppe appear along the foothills of the Cascades. Douglas-fir – ponderosa pine forests occur on the moister sites near the foothills of the surrounding mountains. Special habitats include sand dunes, gravelly areas, basalt cliffs, steep canyons, alkali lakes and vernal pools.

Many grassland and shrub-steppe species in this ecoregion are declining. Isolation and fragmentation of intact habitat is a primary factor. Non-native, weedy plant species are also a factor; they are a persistent and increasing feature of the limited semi-natural and natural landscape.